Gastvorträge am Fachbereich Mathematik

TECHNISCHE UNIVERSITÄT DARMSTADT

Rhein-Main-Kolloquium Darmstadt

Am **Freitag, 24. Januar 2025**

Alexander Glazman, Universität Innsbruck
Vortrag: **Phase diagram of the loop O(n) model**

Yvan Velenik, Universität Genf
Vortrag: **Interfacial phenomena in the planar Ising model: an overview of nonperturbative results**

Ort: **S1|05 Raum 24 (Maschinenhaus)**
Magdalenenstraße 12, 64289 Darmstadt

Zeit: **15:00 Uhr**

Interessenten sind herzlich eingeladen!

Alexander Glatzman: Title: Phase diagram of the loop O(n) model
Abstract: Phase transitions are natural phenomena in which a small change in an external parameter, like temperature or pressure, causes a dramatic change in the qualitative structure of the object. To study this, many scientists (such as Nobel laureates Pauling and Flory) proposed the abstract framework of lattice models. The focus of this talk is on the loop O(n) model on the hexagonal lattice. Among its particular cases are percolation, Ising model, self-avoiding walk, dimers, integer-valued Lipschitz functions, proper 4-colourings and others. The loop O(n) model has attracted a lot of attention due to its rich phase diagram that includes a large region of parameters with an expected conformally invariant scaling limit. The model is difficult to study due to the lack of monotonicity with respect to parameters: each point of the phase diagram should be treated separately. In particular, existence of macroscopic loops has been established only recently in several sparse regions of parameters. I will present a unifying approach that applies to all n between 1 and 2. Main tools: novel graphical representation, Benjamini—Schramm limit, XOR argument (aka arXiv:2001.11977) and a new bound on a percolation threshold (due to Harel and Zelesko). This is joint work with Matan Harel (Northeastern).

Yvan Velenik: Title: Interfacial phenomena in the planar Ising model: an overview of nonperturbative results
Abstract: I'll review a selection of results about the behavior of interfaces in the planar Ising model obtained during the last three decades. These will include scaling limits of the interface, the phenomena of wetting and critical prewetting, equilibrium crystal shapes and the effect of a gravitational field. The focus will be on nonperturbative results valid in the whole phase coexistence regime.